REMARKS

The abstract and specification have been amended in order to correct grammatical and idiomatic errors contained therein. No new matter has been added.

In order to expedite the prosecution of the present application, Claims 1-4, 6 and 9 have been canceled and replaced by newly presented Claims 12-15 which more particularly point out and distinctly claim the subject matter which Applicants regard as the invention. No new matter has been added.

Claims 1-11 have been rejected under 35 USC 103(a) as being unpatentable over Hata et al. Claims 1, 3-6, 8, 9 and 11 have also been rejected under 35 USC 103(a) as being unpatentable over either of EP '964 or U.S. Patent No. 4,977,133 to Ishida et al. Claims 2, 7 and 10 have also been rejected under 35 USC 103(a) as being unpatentable over either of the patents to Ishida et al in view of the patent to Hata et al. Applicants respectfully traverse this ground of rejection and urge reconsideration in light of the following comments.

In its broadest form, the presently claimed invention is directed to a thermally sensitive recording medium comprising a thermosensitive color developing layer formed on a substrate with the thermally sensitive color developing layer comprising a colorless or pale-colored basic leuco dye, a color developing agent, an acrylic polymer and a colloidal silica possessing a chain structure. The acrylic polymer can be obtained through the copolymerization of an alkylacrylate, alkylmethacrylate and vinylsilane as monomer components and, optionally, acrylonitrile and styrene also may be present as monomer components.

As discussed in the present specification, the thermally sensitive recording medium of the present invention has an excellent water-resistance, good printing aptitude and sealability and is characterized by having less accumulation

of dregs on a printing head. This makes it especially suitable for outdoor use as a handy terminal paper or a delivery slip. The advantageous properties associated with the thermally sensitive recording medium of the present invention is achieved by the combination of the claimed acrylic polymer and colloidal silica. It is respectfully submitted that the prior art cited by the Examiner does not disclose the presently claimed invention.

The Hata reference discloses a heat-sensitive recording body comprising a heat-sensitive recording layer containing a colorless or light-colored basic dye, a color developing agent and an adhesive on a substrate. In the heat-sensitive recording layer, as the adhesive, a composite body of a colloidal silica and an acrylic polymer or a styrene/acrylic polymer and an emulsified and dispersed stearyl amide are present.

In contrast to Hata et al, in the present invention the colloidal silica and the acrylic polymer are not present as a composite body, as is required in the Hata et al reference. As discussed in the first paragraph on page 9 of the present specification, in the case of a complex or composite body particle type in which colloidal silica surrounds an acryl polymer are strongly bonded by a polymerization bond, when it is used as a binder for a thermally sensitive layer, fusing or contacting of the acryl polymers to each other become difficult due to the presence of the colloidal silica and the film-forming ability becomes obstructed. In contrast thereto, in the present invention where the acryl particles and colloidal silica are not added in the form of a composite, the colloidal silica combines with the acryl particles weakly by absorption and do not obstruct film formation caused by the acryl particles to each other. This enables a strong film to be formed so that the water-resistant property is improved. Moreover, the good film-forming ability results in the strength of the thermally sensitive recording layer being improved along with the printing aptitude.

Comparative Example 3 on page 30 of the present specification corresponds to the disclosure of Hata et al in that an acrylic emulsion/colloidal silica composite resin was used in place of the acrylic polymer and colloidal silica of the present invention.

A comparison of the results in Table 3 on page 33 of the present specification between Example 1 and Comparative Example 3 illustrates that the thermally sensitive recording medium of the present invention is clearly superior to that of Hata et al with respect to water resistance, printing aptitude and dregs on a printing head. This is clearly unexpected in light of the disclosure of Hata et al and establishes the patentability of the presently claimed invention thereover.

Similar to Hata et al, Ishida et al discloses a heat-sensitive recording material comprising a substrate and a heat-sensitive recording layer thereon containing a colorless or light-colored basic dye. The recording layer also contains an emulsion containing complex particles of colloidal silica and at least one of an acrylic polymer and styrene-acrylic polymer is added to the coating composition for the recording layer. As discussed above, the complex particles of colloidal silica and the acrylic polymer produce a heat-sensitive recording material that corresponds to Comparative Example 3 in the present specification and is inferior to that of the present invention with respect to water-resistance, printing aptitude and dregs on a printing head. Therefore, for the same reasons discussed above, the presently claimed invention is clearly patentably distinguishable over Ishida et al, singularly and in combination with Hata et al.

Reconsideration of the present application and the passing of it to issue is respectfully solicited.

Respectfully submitted,

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Encl: Replacement Abstract
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